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## PATENT SPECIFICATION



Convention Date (Germany): Dec. 18, 1929.

**375,260**

Application Date (in United Kingdom): Dec. 15, 1930. No. 37,825 / 30.

Complete not Accepted.

### COMPLETE SPECIFICATION.

#### Improved Means for Separating and Conveying Stiff Sheets of Material from Piles.

We, GEORGE MANN & COMPANY, LIMITED, a British Company, of Ampton Street, Grays Inn Road, London, W.C. 1, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to improved means for separating and conveying stiff sheets of material from piles.

It is often necessary to remove from a pile and convey separately to some other point stiff sheets, boards and the like such as sheets of metal, wood, celluloid, cardboard, glass or other material which are rigid as compared with paper. This conveyance of the sheets may be required for further working the sheets, and is often necessary when printing or stamping metal sheets or the like.

Hitherto it has been proposed to remove sheets from piles by providing suckers to act on the front edge of the pile, e.g., in printing, the edge directed towards the printing station, to lift the sheets, which are then conveyed on a reciprocating chain.

This method is open to the objection that a reciprocating chain must be used, in which the reversal of motion is accompanied by a loss of time, so that the attainment of a high running speed is difficult or impossible. Moreover the bearing for the chain forms an obstacle above the pile.

Now, an object of the present invention is to overcome these disadvantages by separating and conveying means by which the conveyor is enabled to travel continuously in the same direction and the sheets can be separated from a pile and conveyed at a high running speed.

Another object of the invention is to lift stiff sheets from a pile and convey these without scratching the sheets, par-

ticularly the printed surface of printed sheets.

To these ends, the present invention broadly consists in means for separating and conveying stiff sheets from piles, in which the sheets are successively lifted at their edges preferably by suckers to pass the edge of the individual sheet so lifted through a gap in a conveyor which is travelling towards such edge and is adapted to pass under the sheet to receive and convey this to the place desired without touching the next sheet in the pile, the conveyor running continuously or intermittently in the same direction at a uniform or variable speed.

By such conveying means for individual sheets taken from a pile a high running speed may be attained if desired, while in the case of printed sheets the conveyor travels over the pile without touching the printed surface of the sheet below and the suckers lift the sheet without scratching its printed surface.

In order that the present invention may be the more clearly understood reference is made to the accompanying drawings in which an embodiment of the invention is illustrated by way of example and in which:—

Fig. 1 shows the separating and conveying means in side elevation at the instant of raising a sheet.

Fig. 2 shows the means in side elevation with a sheet in course of being conveyed.

Fig. 3 is a front elevation of Fig. 2.

1 designates the pile of sheets. 2 is the connection to the place of working, to which the sheet is to be fed. 3 represents an endless grid chain arranged round the pile and running over sprocket wheels 4, 5, 6, 7, the wheel 7 of which is driven in suitable manner by a wheel 8. The grid chain 3 comprises parallel rods 9, which are distributed in groups along the chain so that gaps 10 are formed at inter-

vals to enable the sheet to be raised by suckers 11 into one of said gaps 10 and the oncoming rods 9 to pass under the sheet 12 as shown in Fig. 1, so that the sheet 12, as shown in Fig. 2, rests on the rods 9 and is conveyed thereby, the path of the rods being so arranged as not to touch the next sheet in the pile. On the last rod 9 of each group of rods stops 13 are arranged, which reliably carry along the sheet 12. The arrangement of the endless chain guided around the pile 1 enables a plurality of gaps 10 and groups of rods 9 to be provided which, in the example illustrated, are three in number so that a continuous working can be obtained.

The suckers 11 act on and raise the rear edge of the sheets without danger of scratching the sheets.

This arrangement presents the advantage, that the stroke of the suckers 11 may be kept very small, providing the pile is automatically fed in known manner so that the upper sheet is always at the same distance from the upper side of the endless chain.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Means for separating and conveying comparatively stiff sheets from piles in which an edge of the sheet to be separated and conveyed is lifted and intruded

into a gap in a conveyor which is travelling clear of the pile towards such edge and is adapted to pass under the sheet to receive and convey this to the desired place.

2. Means as in claim 1, in which the conveyor runs continuously in the same direction.

3. Means as in claim 1, in which the conveyor runs intermittently in the same direction.

4. Means as in claim 1, 2, or 3, in which the conveyor has the form of an endless chain, e.g., of the grid type.

5. Means as in any preceding claim in which the conveyor is provided with a series of gaps alternating with sheet supporting sections.

6. Means as in any preceding claim, in which the conveyor has stops adapted to push on the edge of the sheets.

7. Means as in any preceding claim, in which the conveyor is of an endless form arranged round the sheet pile.

8. Means as in any preceding claim, having suction lifters for that edge of the sheets which is to be raised.

9. Means for separating and conveying comparatively stiff sheets from piles substantially as described or shown.

Dated this 15th day of December, 1930.

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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1932.

